PLASTIC SURGERY EDUCATIONAL FOUNDATION

THE AMERICAN SOCIETY FOR AESTHETIC PLASTIC SURGERY, INC.

Secondary Surgery, Choices In Breast Augmentation

Over Vs. Under, Smooth Vs. Textured, Silicone Vs. Saline Implants

ASPS/PSEF – ASAPS

Brian M. Kinney, MD, FACS, MSME

My Practice Profile

- 40% primary augmentation
- 35% redo augmentation
- 15% lift + augmentation
- 10% reconstruction augmentation

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My Practice Profile

- 55% subglandular
- 45% submuscular
- 60% smooth
- 40% textured
- 95% round
- 5% tear drop

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My Practice Profile

- 330-360/325-350 cc "average" size
- Largest 800 cc – 1 case
- Smallest 180 – 2 cases
- There has been a lot of pressure by patients for larger implants
  - Until the last 1-2 years
  - Long-term sequelae not favorable

My Practice Profile

- 85% saline/15% silicone 3 years ago
- 60%/40% now
- 50% single/50% married
- 25% age 20's
- 40% age 30's
- 20% age 40's
- 10% age 50's

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My Practice Profile

- Oldest primary augmentation
  - 55 year old
- Oldest redo augmentation
  - 77 year old
- 5% teens or 60's and above
  - ~5 pts. <18

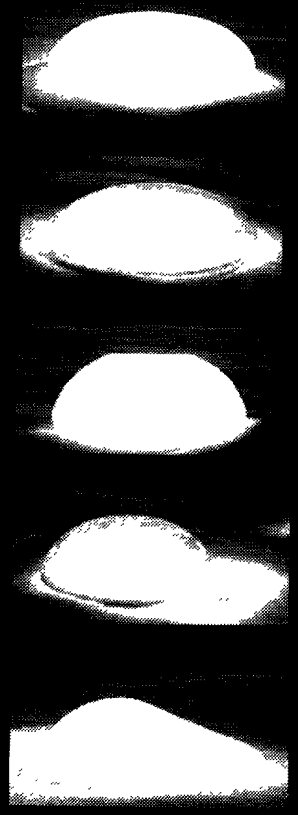
My Practice Profile

- 50% Caucasian
- 15% Asian
- 15% Latino
- 10% African American
- 10% mixed, others
- Aesthetics vary with ethnic groups

What's Available On the Market

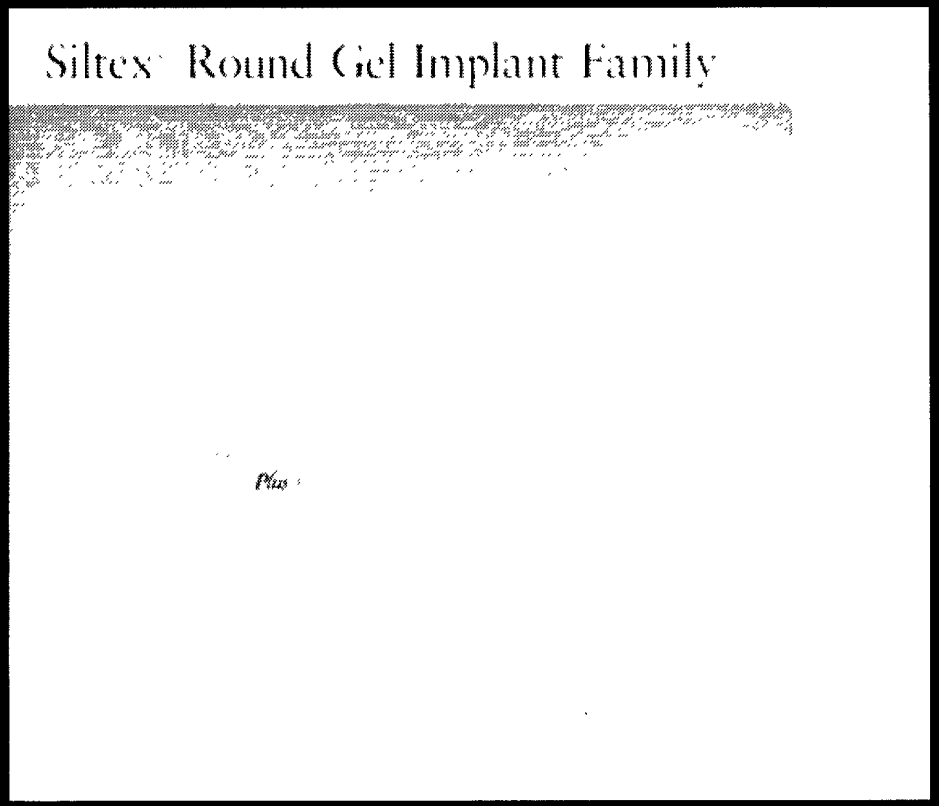
- Inamed
- Mentor
- Silimed
- Others

What's Available (In The US)

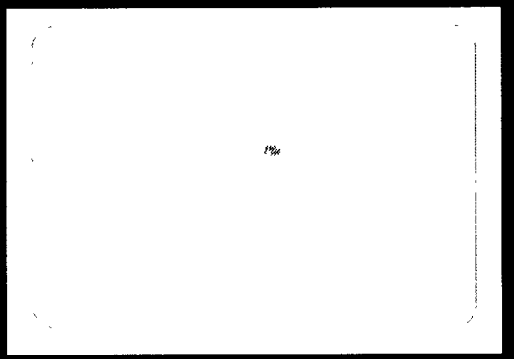


- Mentor silicone gel options
  - Round
  - Becker (Adjunct Study)
  - CPG (IDE Study)

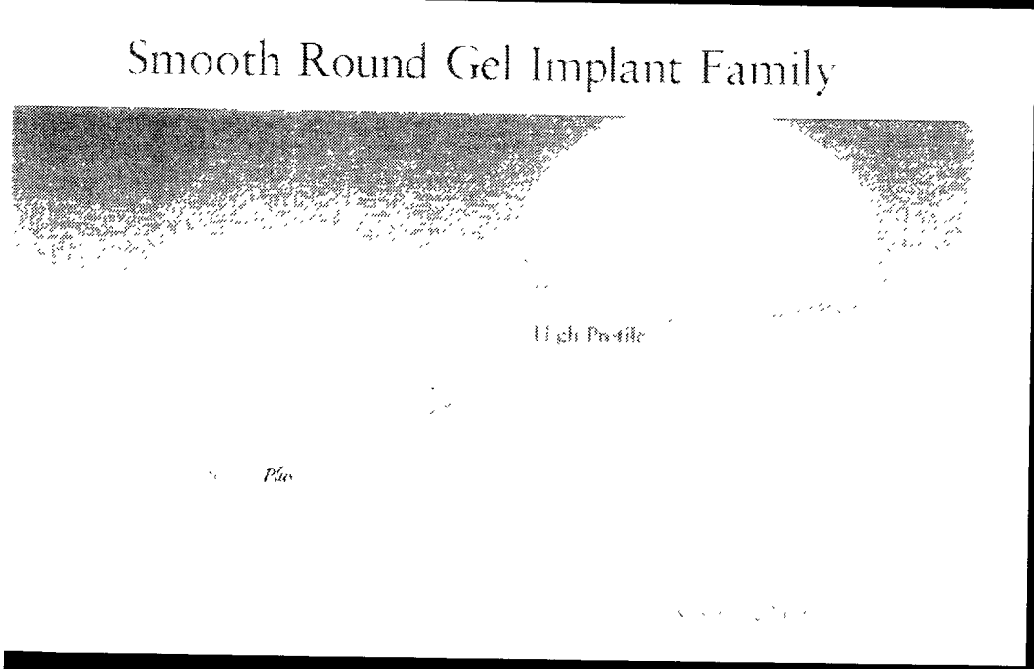
What's Available (In The US)



- Mentor Siltex Gels
  - Round Moderate
  - Round Moderate Plus
  - Round High Profile

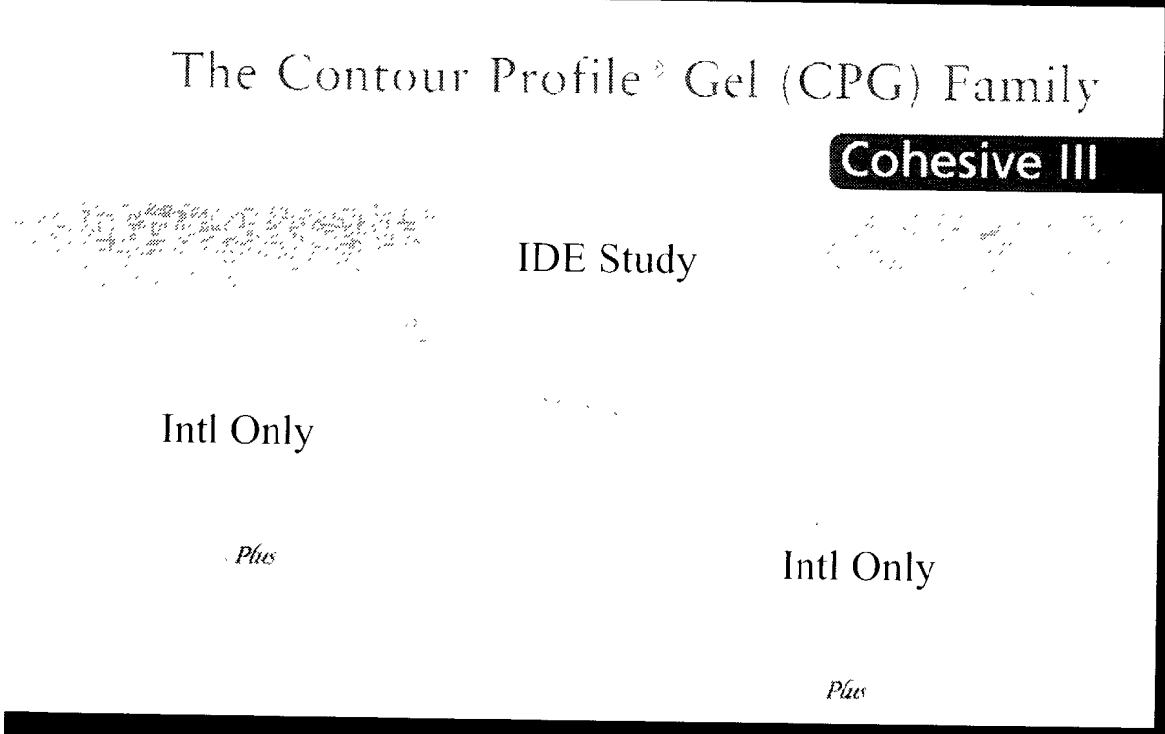


What's Available (In The US)



- Mentor Smooth Gels
  - Round Moderate
  - Round Moderate Plus
  - Round High Profile

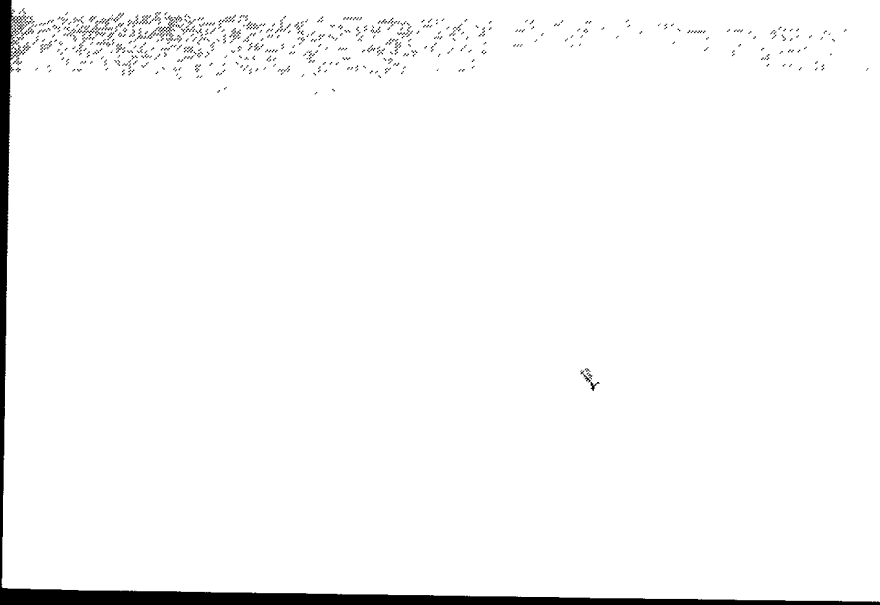
What's Available (In The US)



Mentor Contour Profile Gel (available in IDE study only)

What's Available (In The US)

Smooth Round Becker 25 and Becker 50 Expander/Implants



- Becker Adjustable Implant (Adjunct Study)
  - Siltex Becker 25
  - Smooth Becker 25
  - Siltex Becker 50
  - Smooth Becker 50

What's Available (Outside The US)

- PIP
  - French company
  - Questions arose during FDA hearing of March 2000
  - Pre-filled saline and hydrogel implants
- TiBreeze implants
  - PIP and GfE , joint venture
  - GfE
    - a German aerospace company
    - Titanium coating over cohesive gel
- Cohesive Gel
  - Minimal experience in the US
- Novamed
  - Hydrogel?
- Rofil
  - Cohesive gel
- Eurosilicone

What's Available (in the US)

- Approved Silicone
  - Mentor
  - Inamed

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Breast Implant Choices

- *Round gel* - available, very restricted
  - Smooth and textured, several projections
  - Several manufacturers

- *Contour gel* - available, very restricted
  - Textured only, few choices
  - Design modifications ongoing

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Implant Location, Texture And Shape

- 1962-1975
  - Over the muscle, smooth, silicone
    - Capsular contracture
- 1975-1987
  - Under the muscle, smooth, silicone
    - Improve capsular contracture
- 1987 –1992
  - Over the muscle, textured, silicone
    - Improve capsular contracture
    - Fewer ruptures, thicker shell

Implant Location, Texture And Shape

- 1989-1992
  - Under the muscle, textured, silicone
    - Improved mammography
    - Silverstein mammography study
- 1992-1995
  - Over the muscle, textured, saline
    - Improved mammography
    - FDA ban

Implant Location, Texture And Shape

- 1995-1997
  - Over the muscle, textured, saline
    - Wrinkling
    - Implant show
    - Trend towards larger implants
    - The South Florida or Texas look
    - "Do you want to Supersize your order (McDonald's marketing)?"
    - Dissatisfaction with look and/or feel

Implant Location, Texture And Shape

- 1997-2001
  - Over or under the muscle, tear drop, saline
  - More "natural"
- March 2000
  - FDA prohibits use of word "anatomic"
  - Hamas studies
  - Decreased use of tear drop

Implant Location, Texture And Shape

- 2000 -> ?
  - Silicone or saline
  - Over or under
  - Smooth or textured
  - Tear drop or round
  - Cohesive…Titanium?
  - Hydrogel…Customization?

Implant Filling Material

- 1962 –1992 / 2002, silicone
- 1975 – 2002, saline
- 1996 – 1999, soy oil (Trilucent)
- 1997 – cohesive gel (outside US)
- 1994 – hydrogel (outside US)

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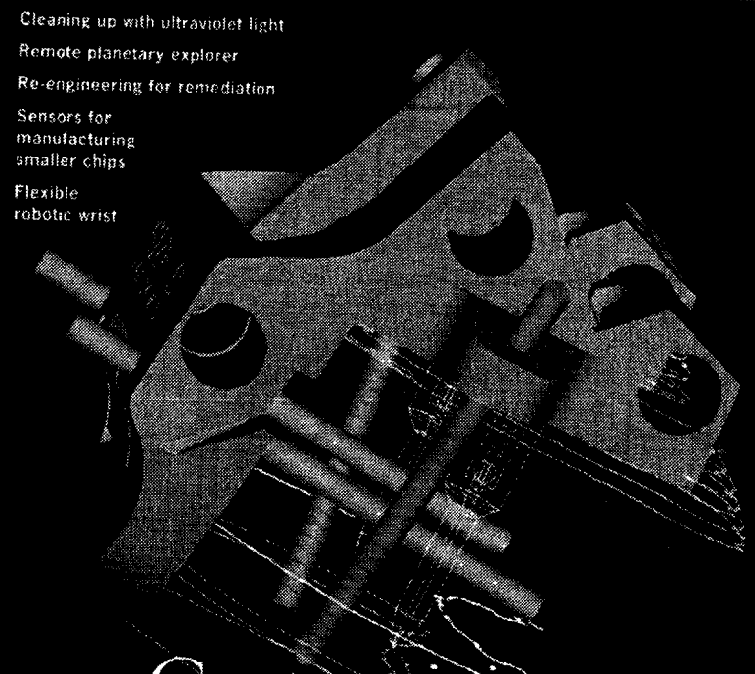
Implant Texture And Shape

mechanical engineering

- 2005 ?
  - Cohesive gel in US
- Differentiation of the market
- Like cable TV vs. broadcast



Customizing Biomechanical Parts

Brian M. Kinney, MD, FACS, M

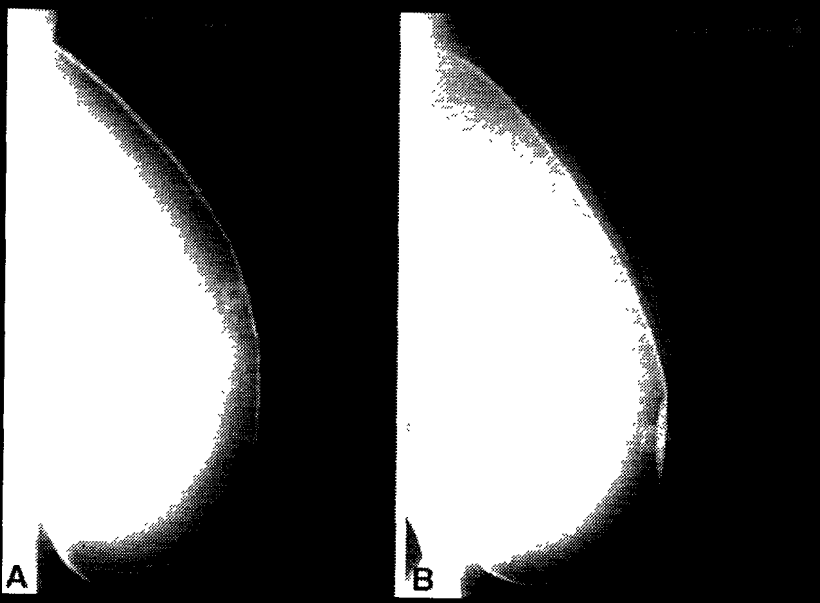
Implant Texture And Shape

- 7-10 shapes
- 15-18 sizes
- 2-3 materials
- Textured
  - Small vs. large texturing
- Hundreds of permutations

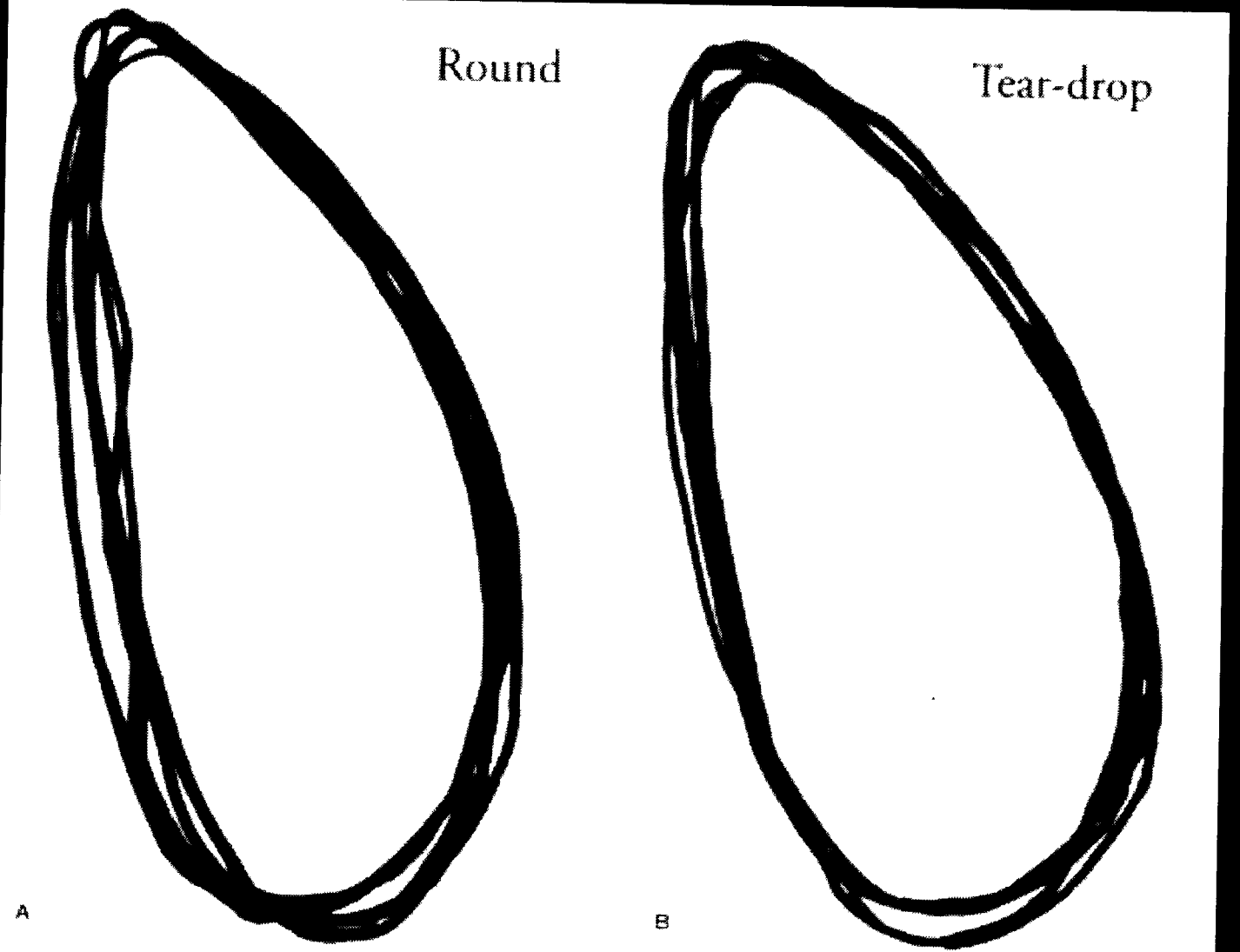
Hamas Studies

- Implant in situ standing position
- Blinded observers
- No compression

Round **Contour**



Circumference Average



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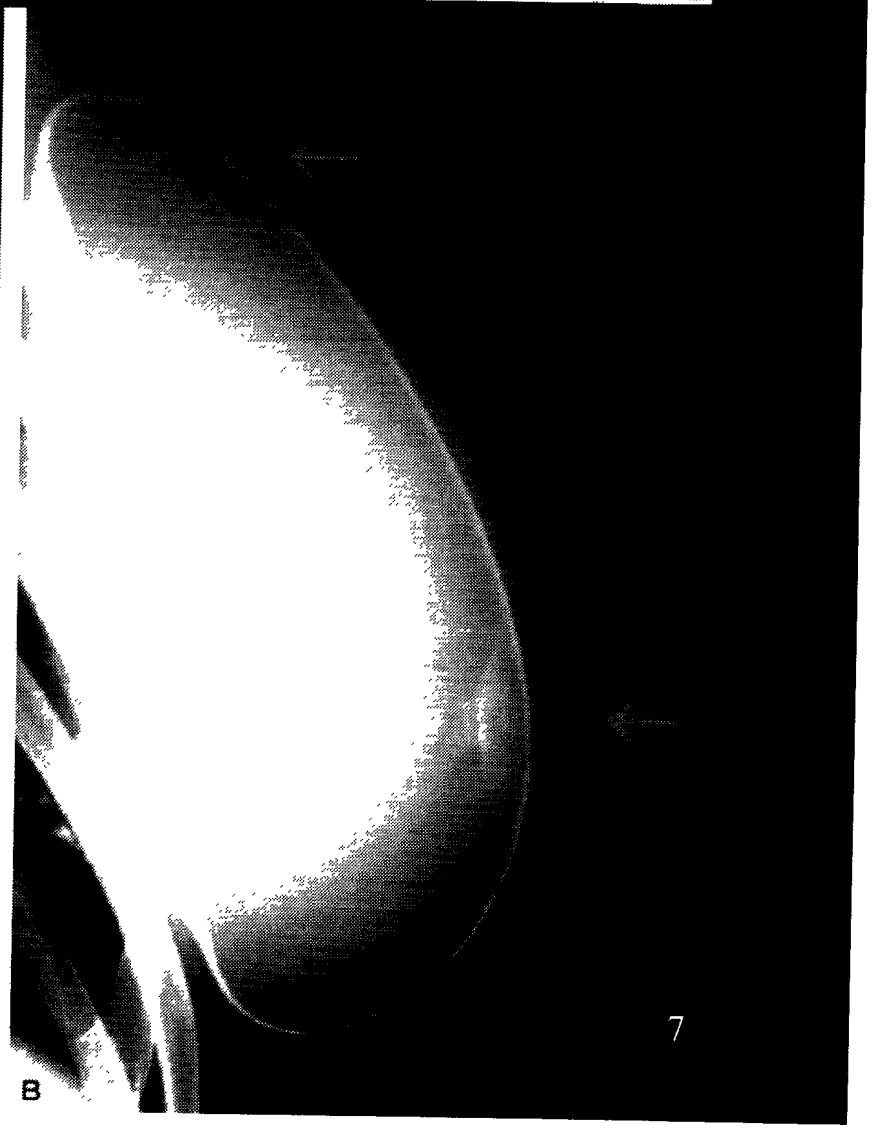
Upright, Round Versus Teardrop

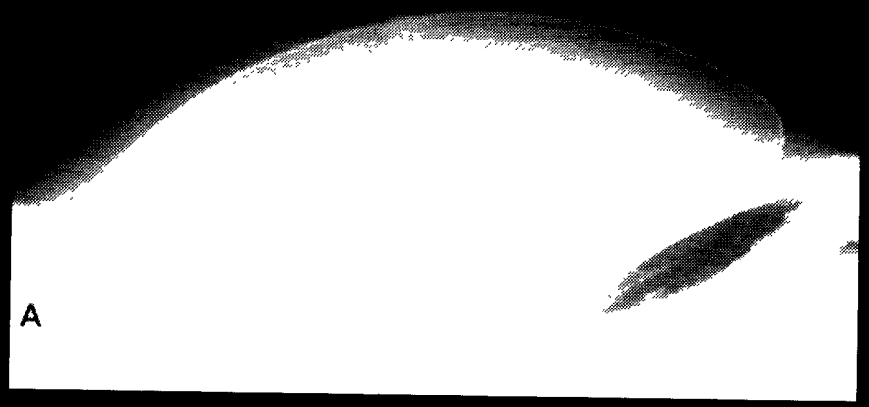
A

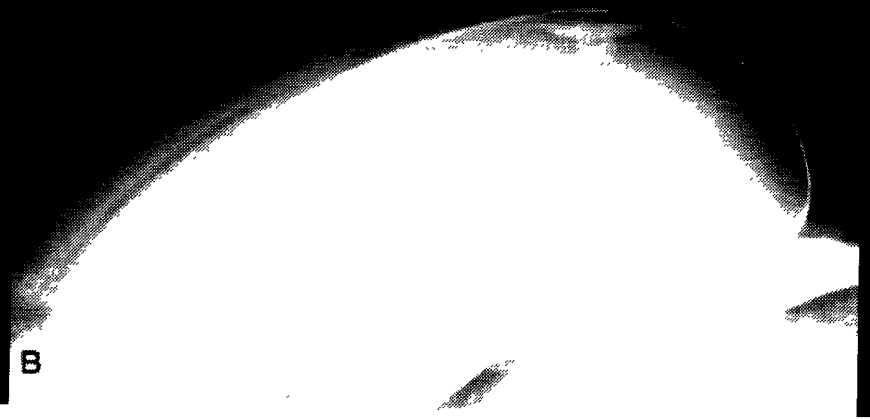


B

Supine, Round Versus Teardrop

Less projection





More projection

Doctor Oriented Thinking

- "The other surgeon says they always should be over/under the muscle"
- "The other surgeon says they always should be textured/smooth"
- "The other surgeon says they always should be anatomic/round"

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Doctor Oriented Thinking

- "This time they should be over/under the muscle"
- "This time they should be textured/smooth"
- "This time they should be anatomic/round"

Company Oriented Thinking

- Teardrop shape is more conforming and "natural"
- Desire to innovate, make more $$
- Less upper pole wrinkling
- Fill volume is more appropriate for bag size
- Marketing advantage to doctors and patients (or is it the company?)

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Patient Oriented Thinking

- ***We should be patient oriented, not procedure oriented!***
- Years ago we did "one size fits all" rhinoplasty
  - Consider those results
  - Do we want to do the same for breast augmentation?

Patient Oriented Thinking

- History and Physical
  - Examine the patient
  - Make an anatomic diagnosis!
  - Don't be a monotonic procedure machine
- Remember when there were only a few choices in implants
- In the future we will have better choices
- In the future we will have more choices
- In the future judgment will be more critical!

Patient Oriented Thinking

- Some patients are not particular
  - No prior experience
- Many prefer a specific method
  - A friend had a certain procedure
  - A friend had a complication
- Previous consultations, news media,etc
- Anatomic considerations

Breast Mound - Shape

- What shape is it?
  - Wide, flat - pancake
  - Cone
  - Teardrop
  - Constricted lower poles – "Snoopy"
- What shape does she want to be?
- How much to be added?
  - Naturalness is dependent on the implant to mound volume ratio
  - Three shapes available now
    - Low profile
    - Moderate profile
    - High profile
- Many more shapes in the future

Breast Mound - Tissues

- How much tissue is there?
- What proportions?
  - Skin
  - Fat
  - Gland
  - Muscle
  - Bony platform
  - Implant

Breast Mound - Skin

- Excess
- Laxity
- Striae
- Vascularity
- Thickness
- Elasticity

Breast Mound - Skin

- Skin/volume ratio
  - Mastopexy
    - Volume adequate
    - Shape or position change
  - Implant
    - Increase firmness
    - Change shape
    - Change nipple to mound relationship
  - Mastopexy plus implant

Breast Mound – Skin And Lift

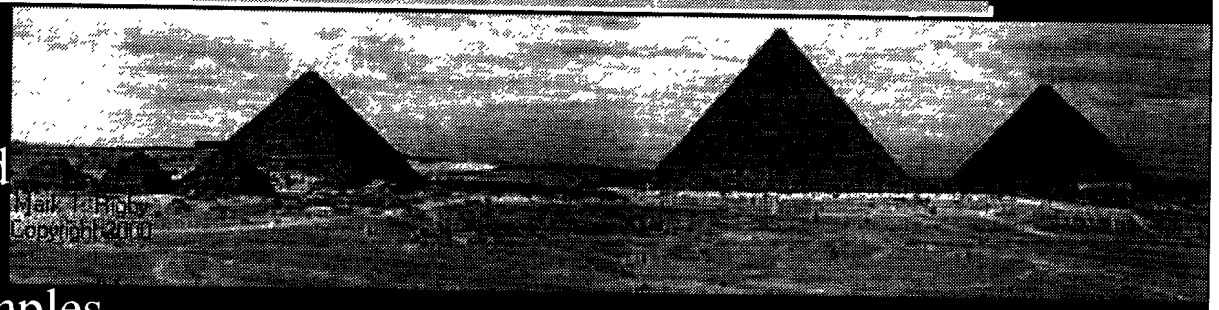
- Mound
  - Skin/volume ratio
    - Volume has five major components
    - Fill the skin with an implant
    - Excise the skin to fit the mound
- Position
  - Pexy, skin, gland or muscle
- Primary principle
  - The more you cut, the more you can shape
  - Beware of patients who want big surgery with little incisions

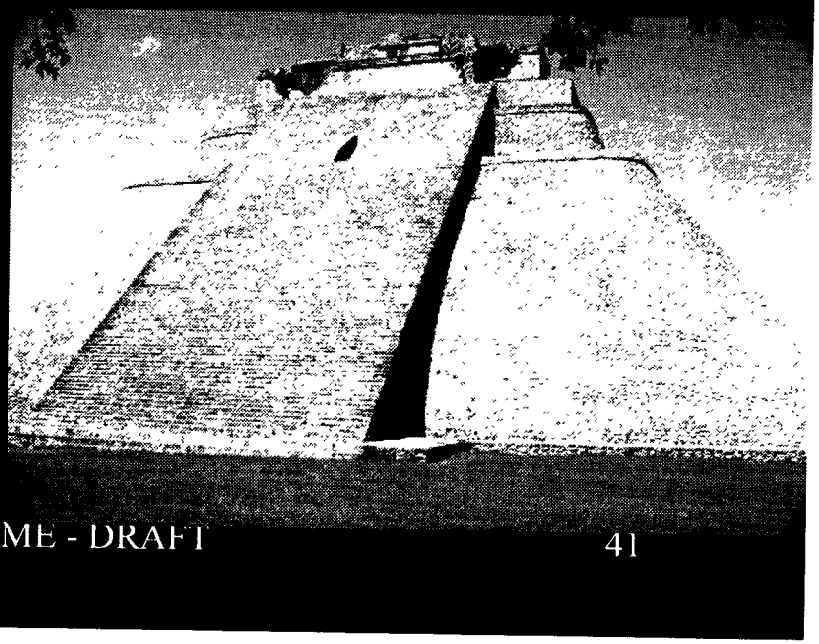
Breast Mound – Skin And Lift

- Subcutaneous fillers
  - We have collagen, hyaluronic acid, glucosamine, fat
  - We don't have elastin
  - The problem of elasticity is one of the major problems in all of plastic surgery
  - It is a major problem in breast augmentation
- Implant alone
  - Increase firmness
    - Small compensation for elasticity
  - Change shape
  - Change nipple to mound relationship
- Mastopexy plus implant

Breast Mound – Skin And Lift

- Periareolar lift
  - Patients don't understand geometry
  - They do understand examples
    - Egyptian pyramid
    - Mayan (flat-topped) pyramid
- Vertical lift
  - "Pinched breast"
- Wise pattern
  - The more you cut, the more you shape





Breast Mound – Implant, Gland

- Implant/gland ratio
  - Influences firmness
  - Pseudoptosis
- Implant/gland ratio
  - ? >0.5, firm breast
  - ? <0.5, loose breast
  - Small implant breast 0.1
  - Large implant breast 1.0
  - "Low implant, high gland" breast more aesthetic

Breast Mound – Fat, Gland

- Fat/gland ratio
  - Influences firmness
  - Pseudoptosis
- Fat/gland ratio
  - ? >0.5, loose breast
  - ? <0.5, firm breast
  - 15 year old breast 0.1
  - 65 year old breast 1.0
  - "Low fat, high protein" breast more aesthetic

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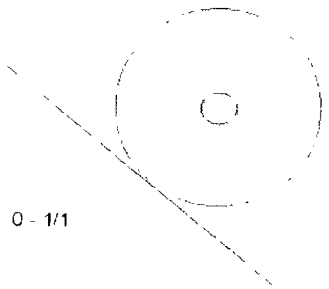
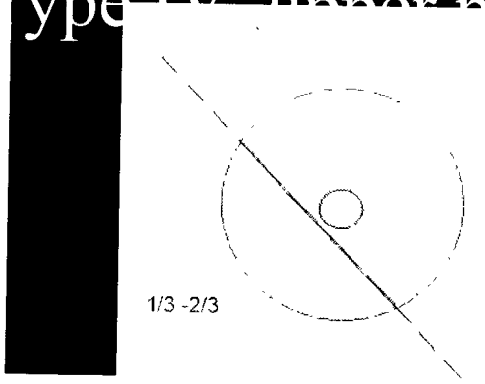
Breast Mound – Fat, Gland

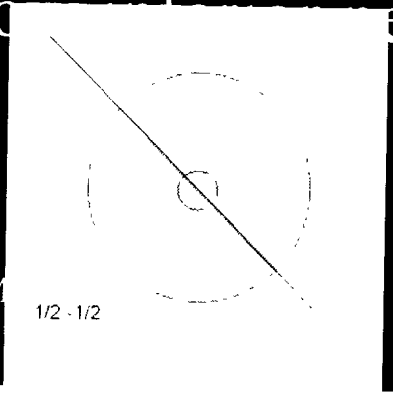
- Fat and gland
  - Check distribution, lateral, medial
  - Check thickness, 2 cm rule (Tebbetts)
- Fat may still cover breast in later years
  - % body fat will increase, too
- Gland will likely atrophy with implant show

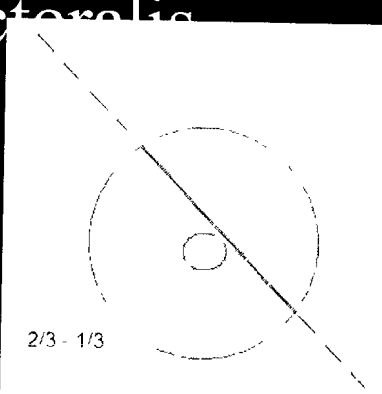
Breast Mound - Muscle "Under" (Half Under)

- Only half under the muscle
- Muscular, not ptosis classification
  - Type I, breast superior to pectoralis
  - Type II, inferior breast below pectoralis
  - Type III, nipple at inferior pectoralis
  - Type IV, upper pole below inferior pectoralis



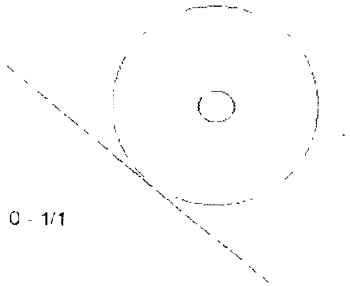


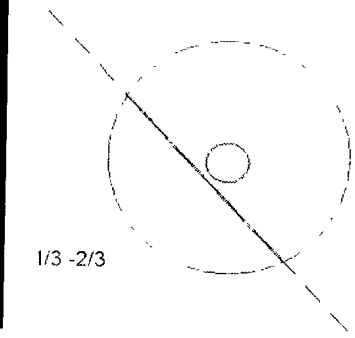


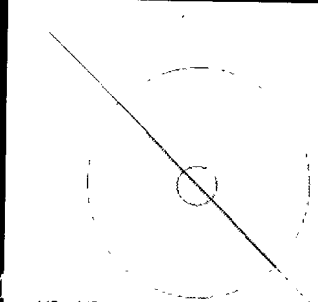


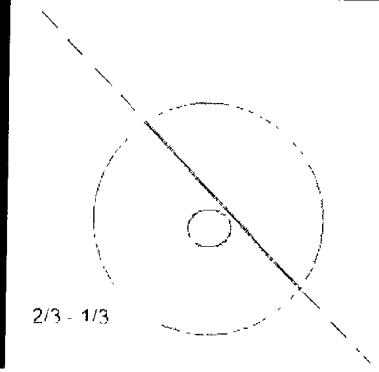
Breast Mound - Muscle/Skeletal Positioning

- Not only IMF-nipple/ptosis relationship
- Also, chest wall-breast mound-intercostal space relationship
- IMF is a fixed point for reference for a given patient, but…..
- IMF varies in location to costal margins, patient to patient
- Trunk vertical height ratio (chest to abdomen) varies



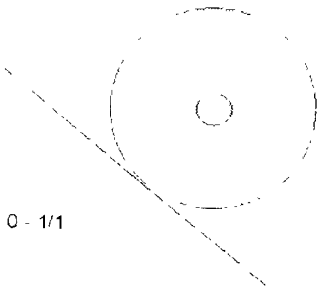


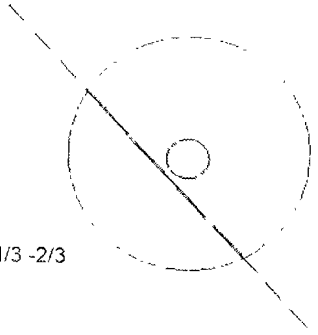


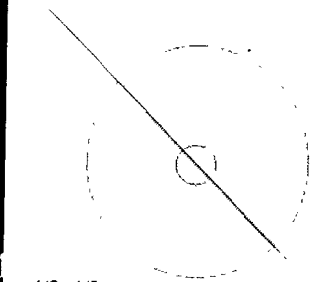


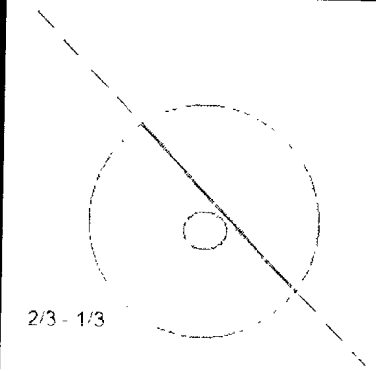
Breast Mound - Muscle/Skeletal Positioning

- Sternal width (percentage width of chest) varies
- IMF position (percentage location from costal margin to clavicle) varies









Evolution Of "Under" The Muscle

- Scenario I
- Check back 5-10 years later
  - Not under the muscle anymore
  - Breast ptosis……..but
  - Implant firmly held under muscle
    - The "alive, under the muscle, wonder bra"
- Elongated breast
  - Not a double bubble
  - "Taffy breast"
- Not the "natural" location
- Most rippling is lateral to pectoralis!
  - Therefore the subpectoral placement doesn't help
  - What percentage of rippling is upper, medial?
- Implant location doesn't matter as much as it seems

Evolution Of "Under" The Muscle

- Scenario II
- Check back 5-10 years later
  - Not under the muscle anymore
  - Breast ptosis……but
  - Implant migration downward with gravity
    - No longer submuscular
  - Inferiorly displaced breast
    - Not a double bubble, IMF intact
    - The "rock in a sock"
- Not the "natural" location either
- Rippling is generalized!
- Position doesn't matter as much as it seems

Breast Mound – Skeletal Platform

- Pectus carinatum
  - No shaped implant?
    - Minimal upper pole convexity
    - Lateral cant to nipples
    - Asymmetry
  - Pectus excavatum
    - Deep cleavage
    - Fill in with breast implant
    - Fill in with pectoral implant

Breast Mound – Skeletal Platform

- Barrel chest
  - Nipples pointed laterally at angle
- Aesthenic chest
  - Nipples point forward
- Costal margin
  - Sharp angulation
    - Narrow chest
  - Flat angulation
    - Broad chest
- Xiphoid tilt
  - Outward
    - Nipples pointing outward
    - Minimal cleavage, large implant required for cleavage
  - Inward
    - Nipples pointing inward
    - Smaller implant required for cleavage

Breast Mound – Skeletal Platform

- 1st – 3rd Intercostal spaces
  - Narrow
    - Implant superior margin close to clavicle
    - Minimal chest wall showing
    - Breast mound fullness on top
    - Smaller implant to avoid upper pole fullness
  - Wide
    - Implant superior margin far from clavicle
    - Maximum chest wall showing
    - Breast mound concavity on top
    - Larger implant for upper pole fullness

Breast Mound – Implant Size And Aesthetics

- 150cc breast + >300cc implant = 1/3 breast, 2/3 implant = unnatural look
- 150cc breast + 150 cc implant = ½ breast, ½ implant = natural look
- Same proportions go for large breast

Breast Mound – Size And Aesthetics

- Larger breasts distort, droop more
  - Implanted or not
  - Higher chance of future surgery
  - At some point, "guaranteed" if desire to maintain youthful breast
- Each patient will look better than her friends at one point in her life
  - If full
    - Look good in her 20's
    - Look ptotic in her 40's
  - If small
    - Look small in her 20's
    - Look "nice" in her 40's
      - Increase in % body/breast fat and size
      - Minimal ptosis

Breast Mound Aesthetics

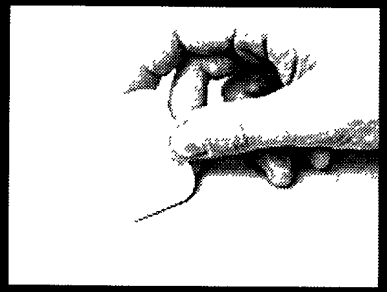
- This is a sliding scale!
- The greater % is implant, the more unnatural
- Implant/breast < 0.5 = "natural"?
- Before the era of obesity and implants
  - Only about 10% of women were D cup

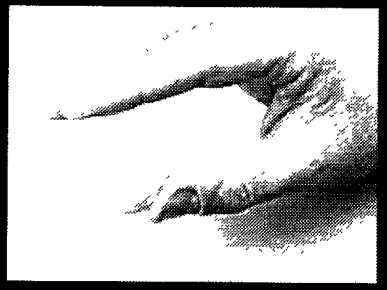
Patient Management

- Vitamin K preop, arnica postop
- Bra + overwrap with bandage
- Absorbable sutures
- Irrigate pocket with betadine
  - Now Ancef, bacitracin, gentamycin
- "No touch" technique

Patient Management

- Topifoam strip at IMF, bra
- Electromagnetic field Rx if desired
  - Actipatch
  - My disclaimer
  - I am part of company
- Antioxidants
- Back to work in 3-4 days





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Breast Anatomy Orientation

- Over/under is off the main point
- Primary reference point for augmentation
  - It is not the IMF!!
  - It is the nipple
- The most projecting point of the mound must be at the nipple
  - The implant must be centered under the nipple!

Implant Location - Subglandular

- Subglandular (over the muscle)
  - >2 cm of breast tissue or fat anteriorly
  - Small implant/breast ratio (<.5?)
  - Doesn't want to be too big
  - Previous capsular contracture under the muscle
  - Ptosis, but only wants a small scar
    - No Benelli?
  - Wants to be "natural"
  - Prefers motion
  - Is a "I want it to look good" woman

Implant Location - Subglandular

- Over the muscle
  - Afraid of looking too big on top
  - Weightlifter (golfer, tennis player, etc.)
    - Implant distorts the muscle
  - More "sight" oriented patient
  - My friend had it that way
  - I heard it was better that way
  - Dislikes the pushup bra look
  - Wants medial cleavage
  - Doesn't like the "satellite dish pointing at the sky" look when supine

Implant Location - Submuscular

- Under the muscle
  - Thin pectoralis, not athletic
  - Small pectoralis, athletic, small implant
    - Implant/breast <0.5?
  - Is a "I want it to feel good" woman
  - My friend had it that way
  - I heard it was better that way
  - Thin medially, afraid of wrinkles

Implant Location - Submuscular

- Under the muscle
  - Push up bra without the bra
  - More fullness on top
  - Wants firmer feel, less motion
  - The safety in numbers approach

  <2cm of breast tissue overall
  - Minimal cover upper/medial quadrants

Implant Location - Submuscular

- Under the muscle
  - Removal of saline in secondary procedure is difficult
    - Water doesn't flow like silicone
  - Exchange implant instead of reuse
  - Puncture implant to drain and remove
- Transumbilical
  - Local physician with serious problems
  - A triumph of technology over reason

Under The Muscle Over The Muscle

- More bruising
- More swelling
- More pain
- More bleeding?
- Slower return to ADL's
- Less natural look
- Non-"anatomic"

- Less bruising
- Less swelling
- Less pain
- Less bleeding ?
- Faster return to ADL's
- More natural look
- "Anatomic"

Under The Muscle Over The Muscle

- Feels more natural
- Fuller on top
- Less wrinkling
- Better in thin patient
- Alive, under the skin Wonder Bra
- Better in mild ptosis
- Worse in severe ptosis

- Feels like implant
- Less on top
- More wrinkling
- Better in muscular pt
- No Wonder Bra effect
- Poorer in mild ptosis
- Better in severe ptosis

Smooth Under Textured Under

- Moves naturally
- Lateral "fallout" when supine
- Early massage

- Stays put
- Central fullness when supine
- No massage ?

Anatomic Under Round Under

- Improved lower projection supine
- Decreased upper pole projection
  - More "natural"
- Textured stay put
  - Minimal risk of rotation
- Better in mesomorph?
- Lateral "fallout" when supine
- "Choking feeling"
  - Less natural
- Textured or smooth stay put
- Better in ectomorph
- Equal in endomorphs?

Incision Location

- Submammary
  - If incision is present from previous surgery
- Transaxillary
  - Excellent for submuscular
  - Usable for subglandular
- Periareolar
  - Versatile
  - Rarely a problem

Chest Wall Configuration Over The Muscle

- Wide, thin, high pectoralis
  - Minimal implant coverage required
  - Lower pectoral border/IMF far above costal margin
    - Implant will look high if under the muscle
- Look at nipple to costal margin relationship
  - If far, plenty of room for implant above the muscle
    - Implant will be properly positioned

Chest Wall Configuration Under The Muscle

- Narrow, thick, low pectoralis
  - Maximum implant coverage required
  - Lower pectoral border, IMF near the costal margin
  - Implant will fall low if over the muscle
    - Loose areolar tissue
  - Implant will not be too high if under the muscle
- Look at nipple costal margin relationship
  - If close no room for implant except under the muscle

Mastopexy And Augmentation

- Mastopexy + Submuscular
  - Evaluate skin laxity and Cooper's ligaments
    - If loose may have "double bubble"
    - Will have "double bubble" later in everyone
      - …Or pectoralis elongation
  - Consider subglandular

Mastopexy And Augmentation

- Mastopexy + Subglandular
  - Evaluate skin laxity and Cooper's ligaments
    - If equal firmness no "double bubble"
    - May have a "rock in a sock"
    - Will have a "rock in a sock" later in everyone
    - Will have "double bubble" later in everyone

Mastopexy And Litigation

- Doctor's Company Experience
  - Periareolar augmentation number one in litigation volume
  - Remember shape issues
- Periareolar resection converts Egyptian pyramid to Mayan pyramid
  - Flatter breast

Capsular Contracture -Endermologie

- Originally developed for burn scars
- High settings
  - Pressure up to 500 mm Hg
  - Mechanical breakup of induration
  - Like OT for hand surgery
- 40 patients, over 1 ½ years
  - Seems to work in ¾ patients
  - We have not accumulated data
  - Definite immediate softening like a massage
  - 6-8 sessions, adjust to pain threshold
- Seems to help Grade II/mild Grade III
- Excellent for early postop, revision contracture

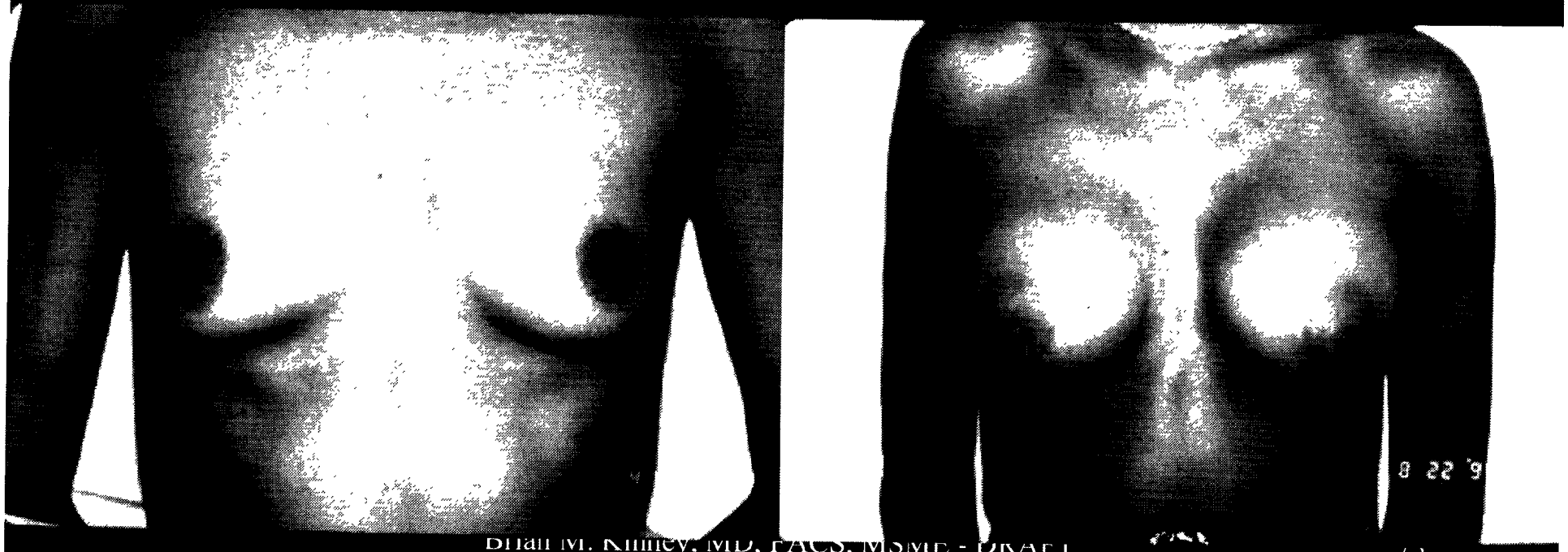
PLASTIC SURGERY EDUCATIONAL FOUNDATION

THE AMERICAN SOCIETY FOR AESTHETIC PLASTIC SURGERY, INC.

Subglandular 360cc Round Textured

Wants a full C

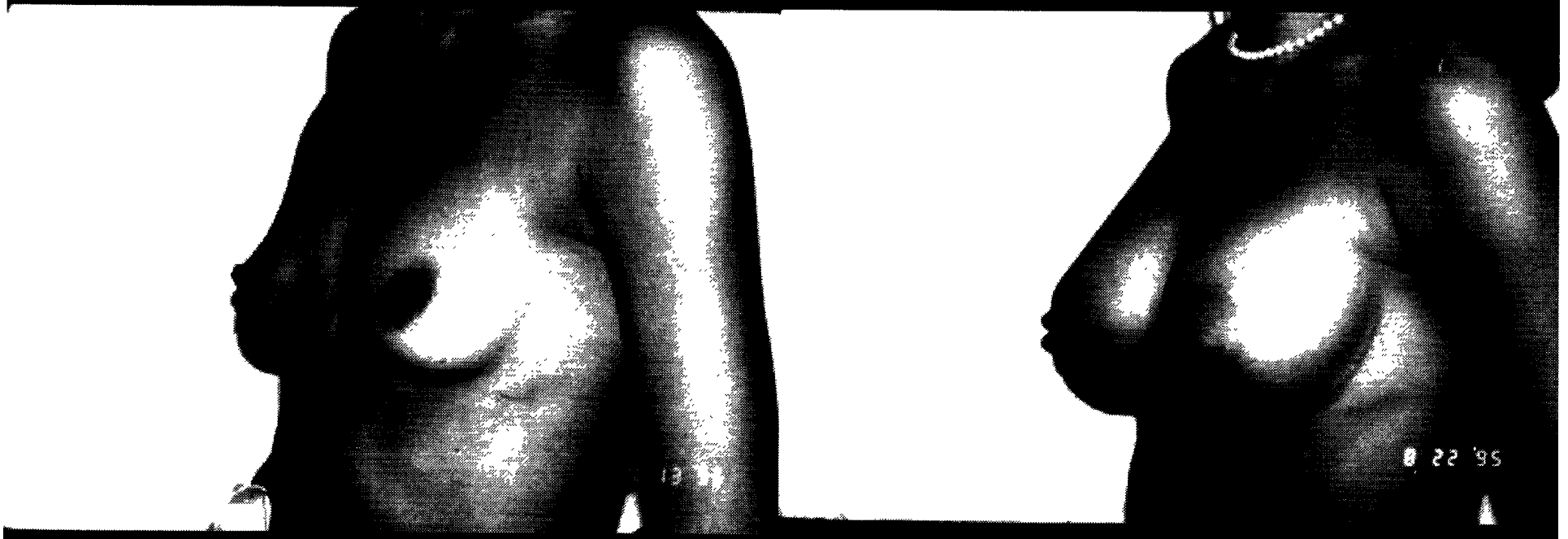
Wants to look natural



Subglandular 360cc Round Textured

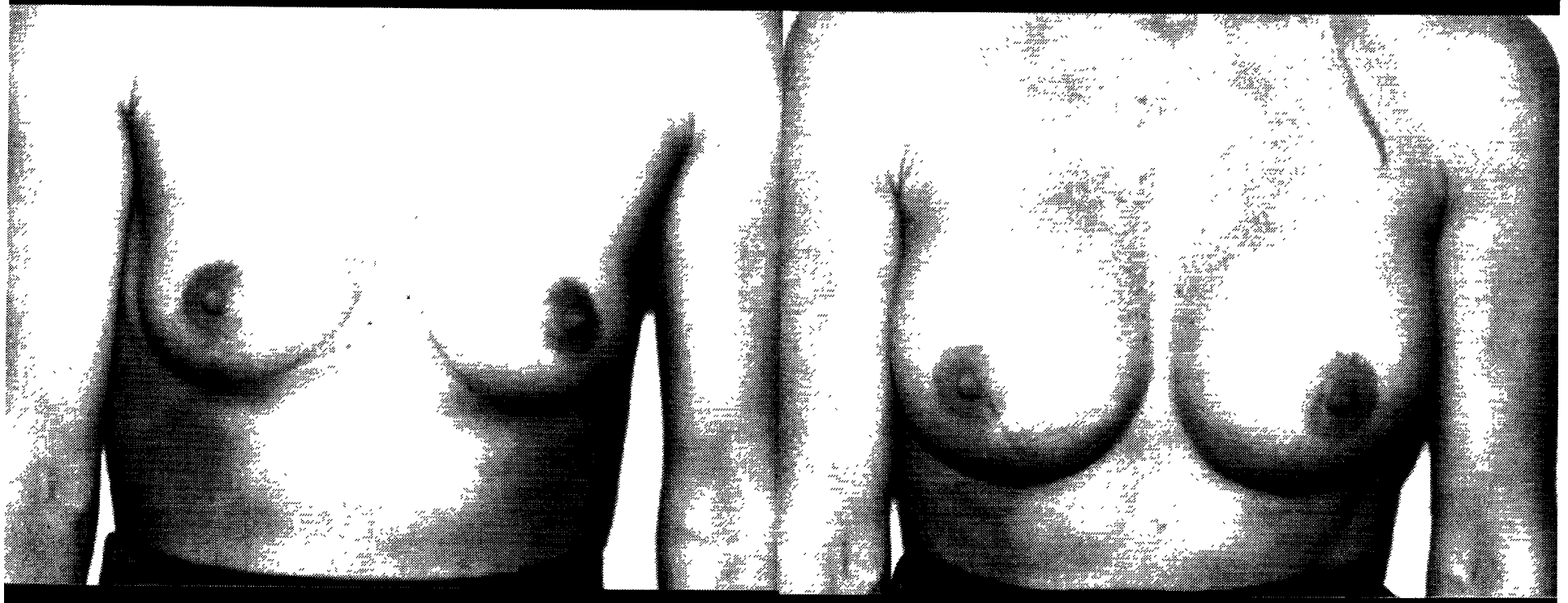
Wants a full C

Wants to look natural



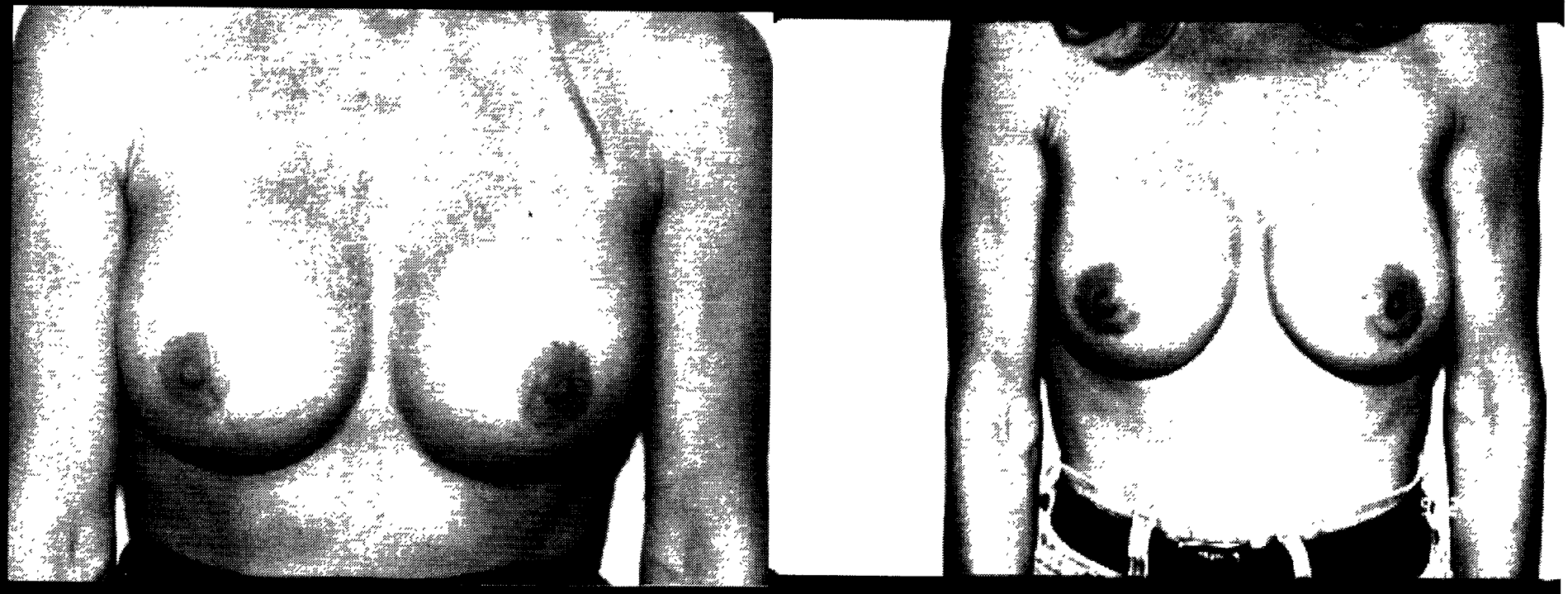
Subglandular 270cc Round Textured

Wants a full C
Axillary incision



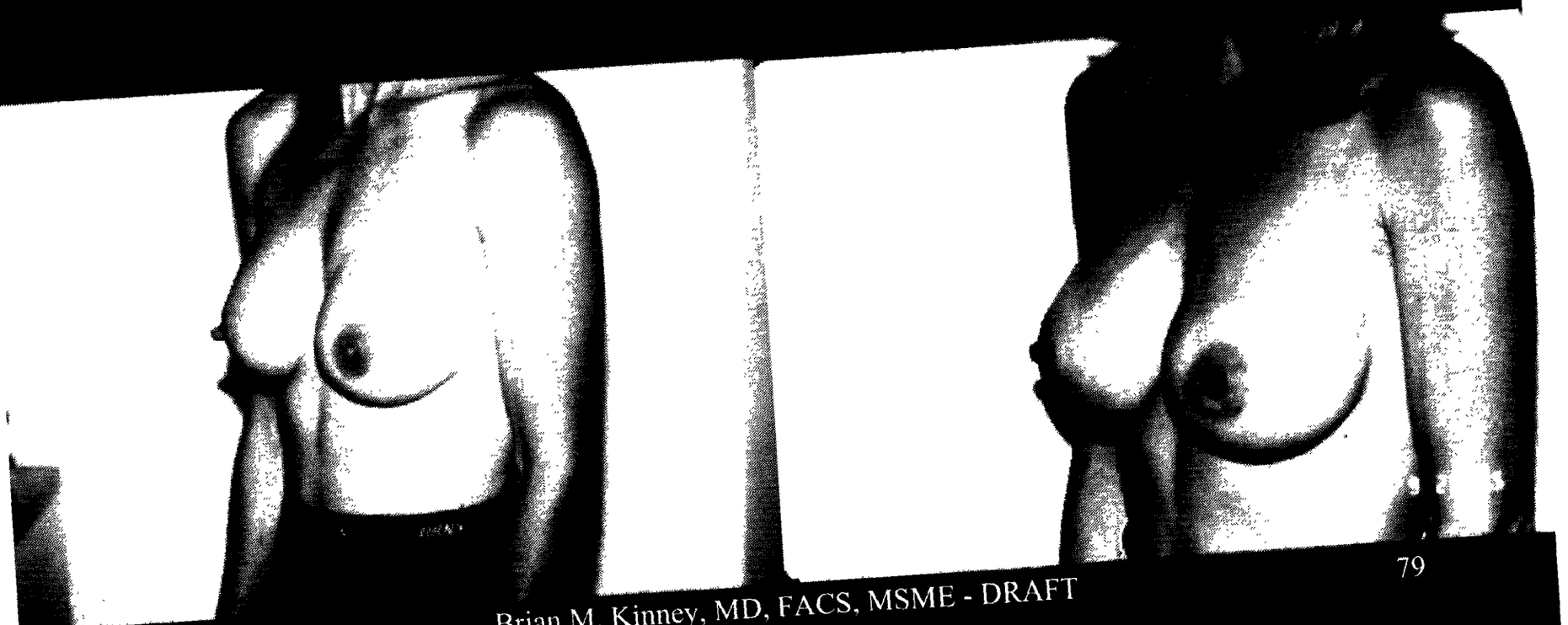
Subglandular 270 cc Round
Subglandular 400 cc Teardrop

Worried about wrinkles



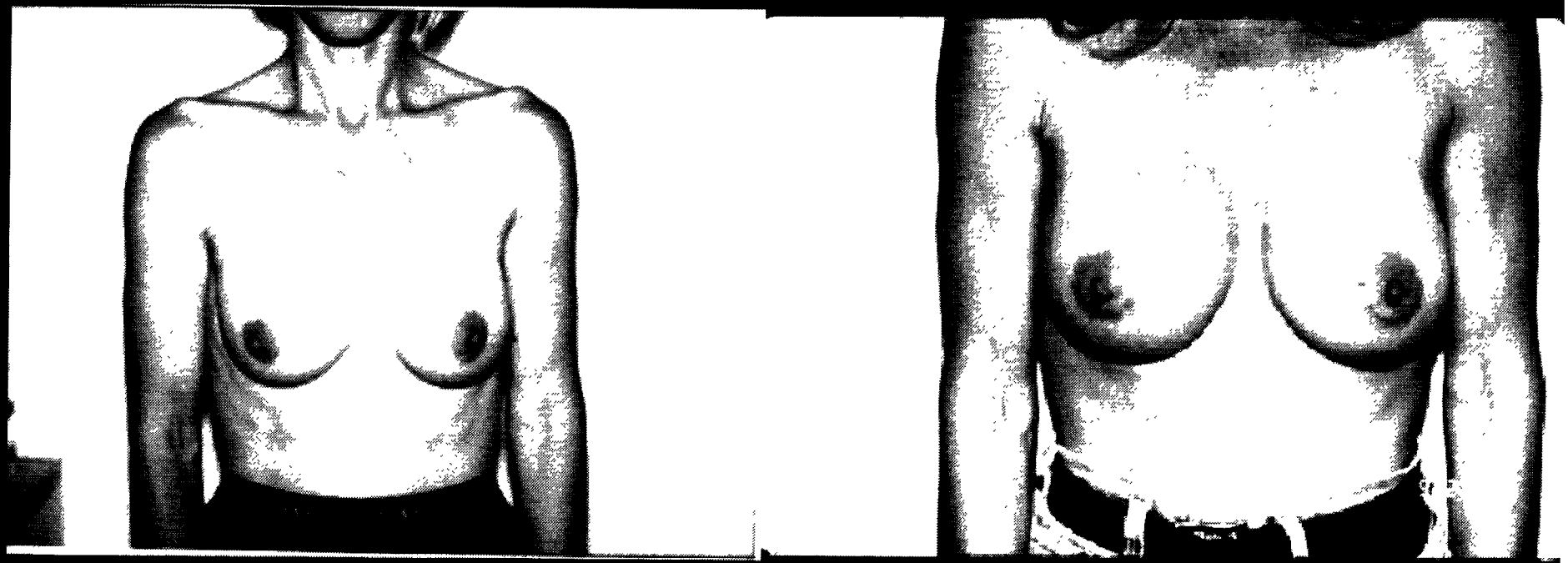
Subglandular 270 cc Round
Subglandular 400 cc Teardrop

Wants a full C again
Worried about wrinkles



Subglandular 330 cc Round
Subglandular 400 cc Teardrop

Wants a full C again
Worried about wrinkles



Subglandular 330cc Round Benelli

Does not want scars

Not adequate for full lift

Subglandular 330cc Round Benelli

Does not want scars

Not adequate for full lift

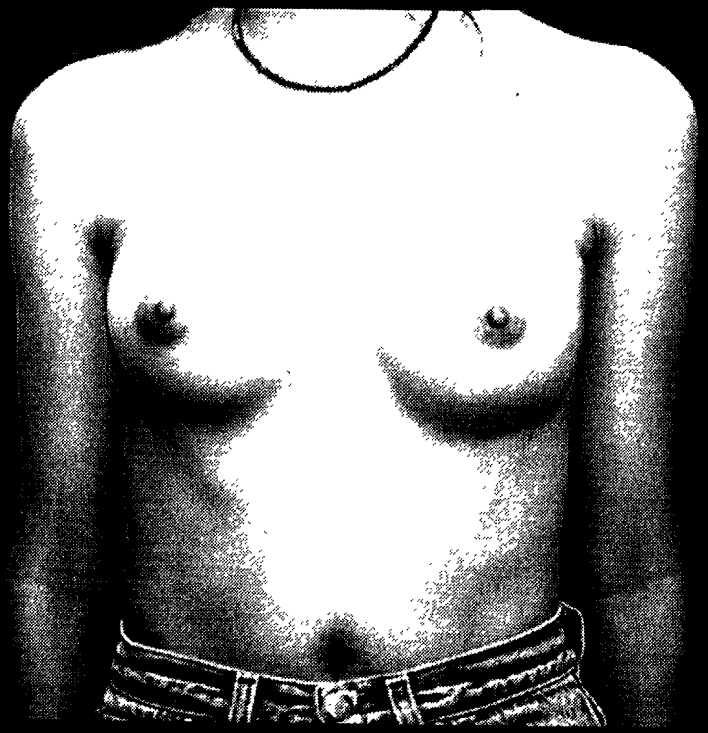
Careful preop consultation is key

Subglandular 330cc Round Benelli

Does not want scars
Not adequate for full lift
Careful preop consultation is key

Submuscular 300cc Round

Wants submuscular
Afraid of being big



Submuscular 300cc Round

Wants submuscular
Afraid of being big

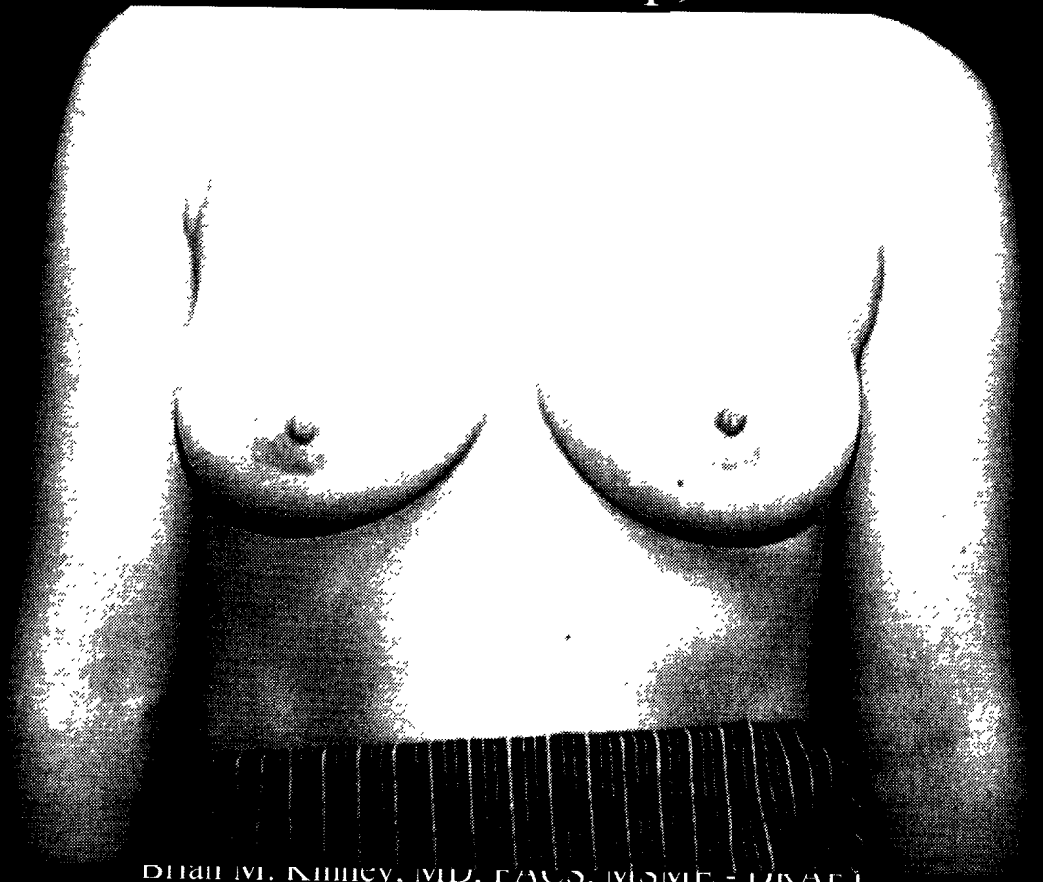
Submuscular 300cc Round

Wants submuscular
Afraid of being big

Submuscular 330cc Textured Anatomic

Willing to be over or under

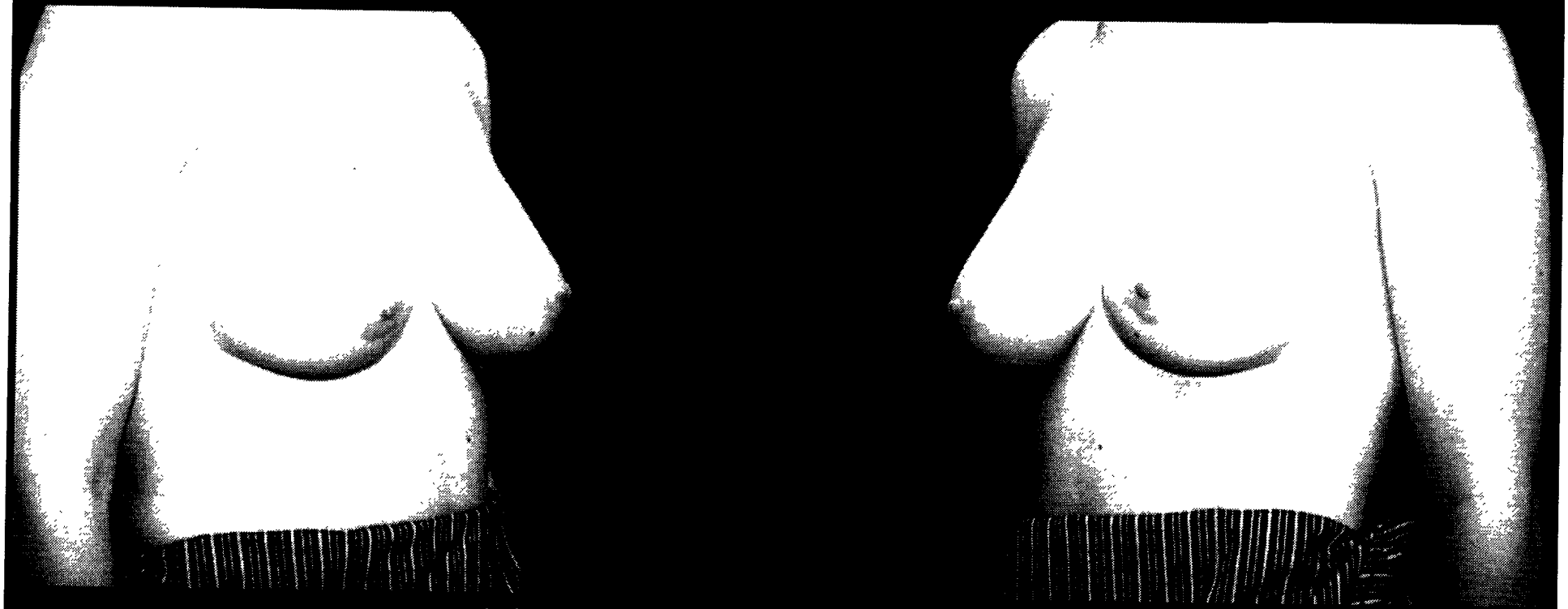
Doesn't want to be full on top, no "Wonder Bra"



Submuscular 330cc Textured Anatomic

Willing to be over or under

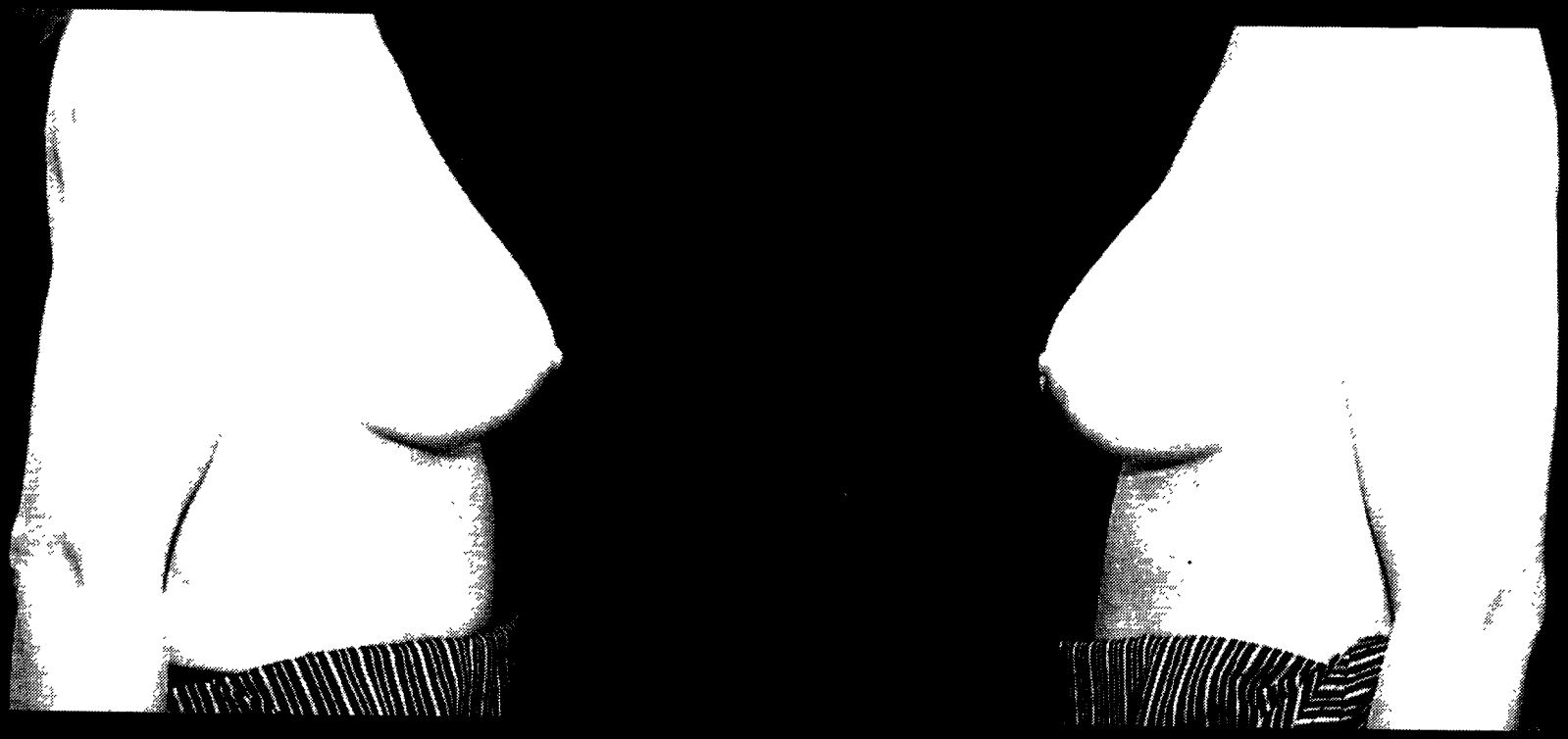
Doesn't want to be full on top, no "Wonder Bra"



Submuscular 330cc Textured Anatomic

Willing to be over or under

Doesn't want to be full on top, no "Wonder Bra"



Submuscular 420 cc Teardrop Smooth
Subglandular 500 cc Round Textured

Previous surgeon, 5 months postop
Pockets not big enough for implants
Inadequate inferior dissection

Submuscular 420 cc Teardrop Smooth
Subglandular 500 cc Round Textured

Previous surgeon, 5 months postop
Pockets not big enough for implants
Inadequate inferior dissection

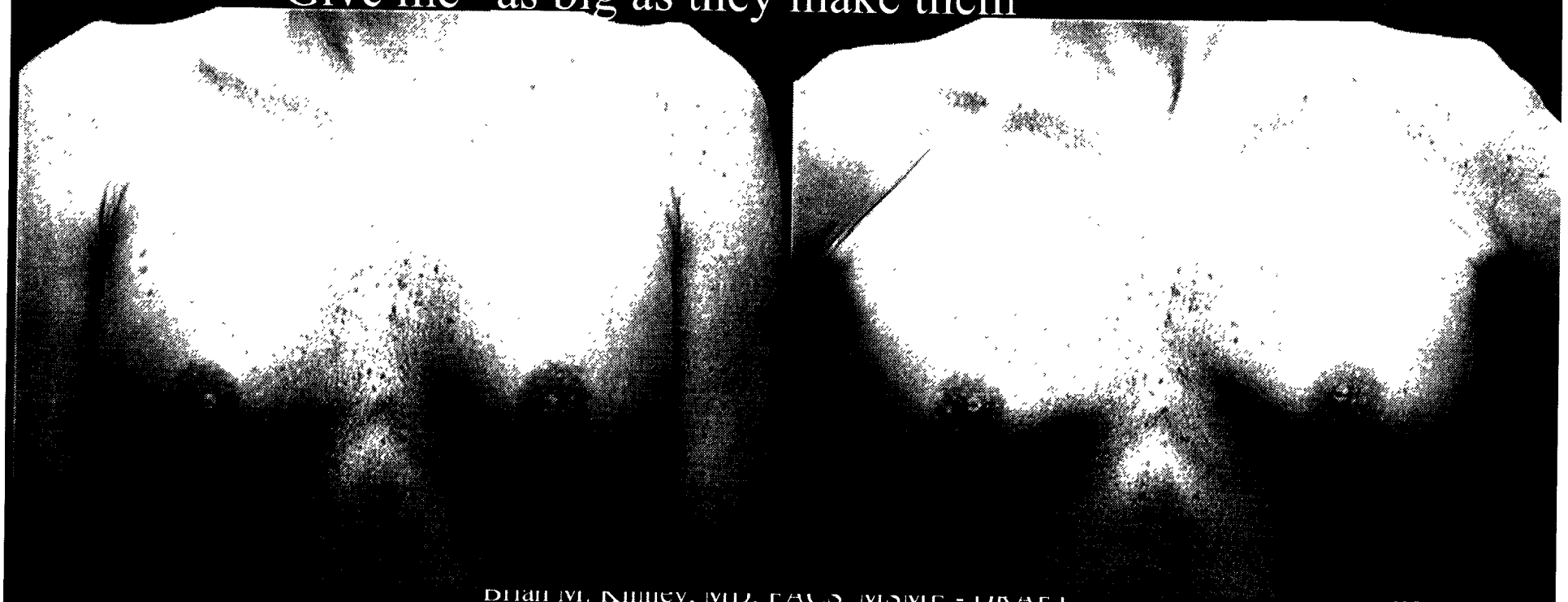
Submuscular 420 cc Teardrop Smooth
Subglandular 500 cc Round Textured

Previous surgeon, 5 months postop
Pockets not big enough for implants
Inadequate inferior dissection

Submuscular 330 cc Round Textured

Relaxed Contracted

Doesn't like elongated breast
Muscle contraction
9 years postop
Give me "as big as they make them"



Submuscular 330 cc Round Textured

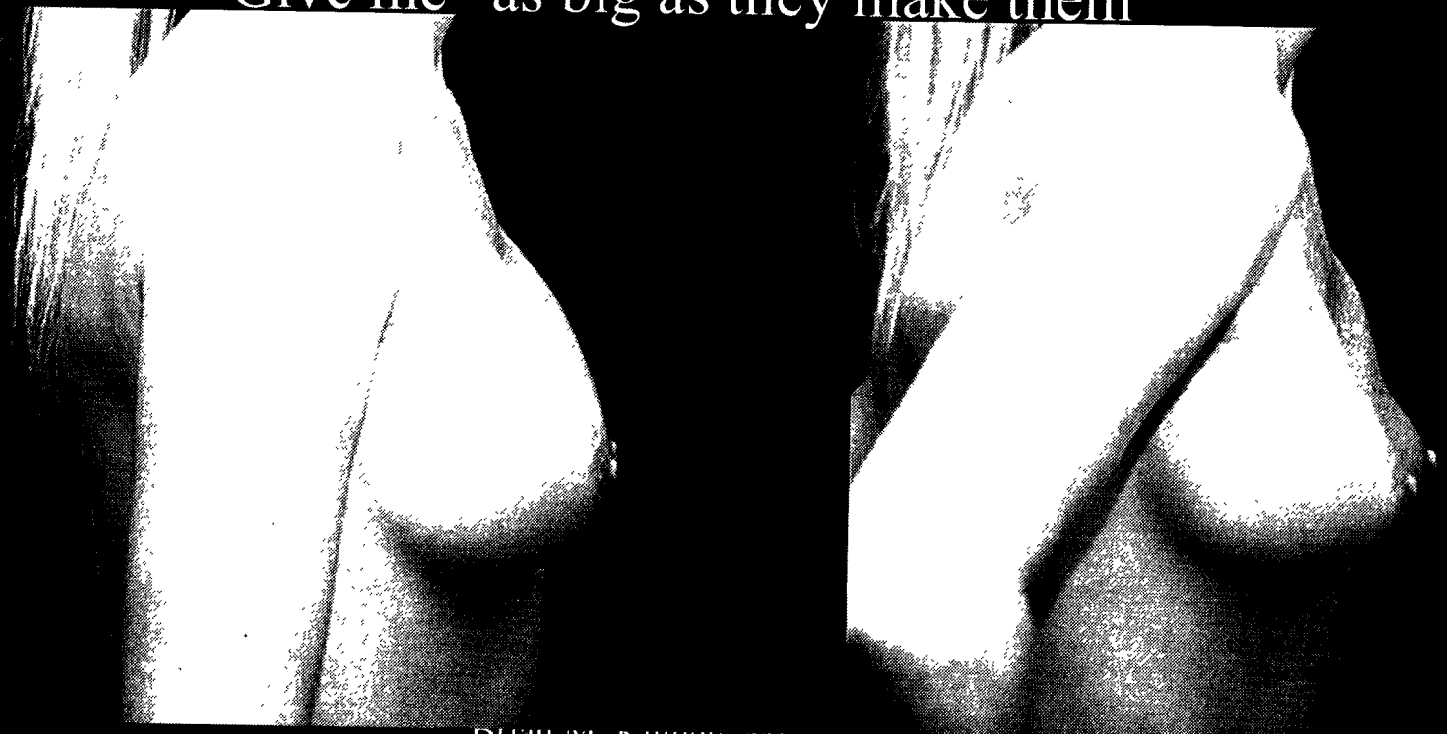
Relaxed Contracted

Doesn't like elongated breast
Muscle contraction
9 years postop
Give me "as big as they make them"

Submuscular 330 cc Round Textured

Relaxed Contracted

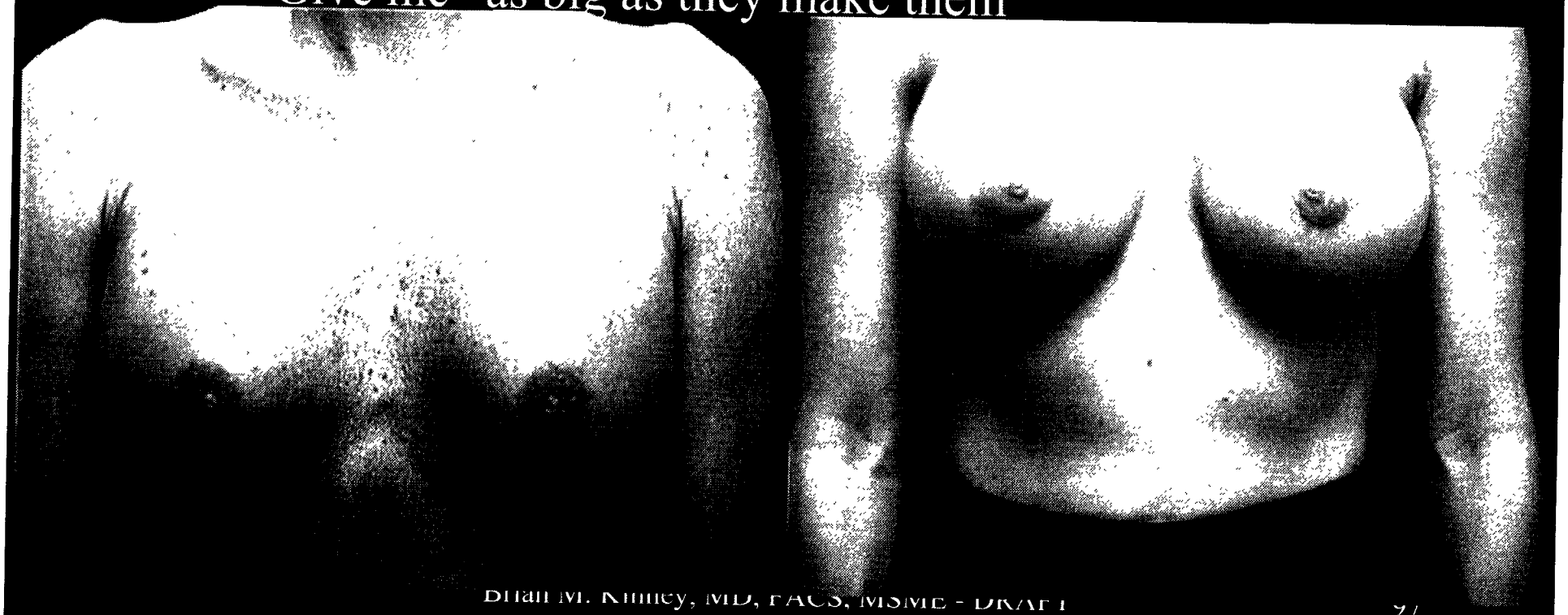
Doesn't like elongated breast
Muscle contraction
9 years postop
Give me "as big as they make them"



Submuscular 330 cc Round Textured Bending Over, Muscles Relaxed

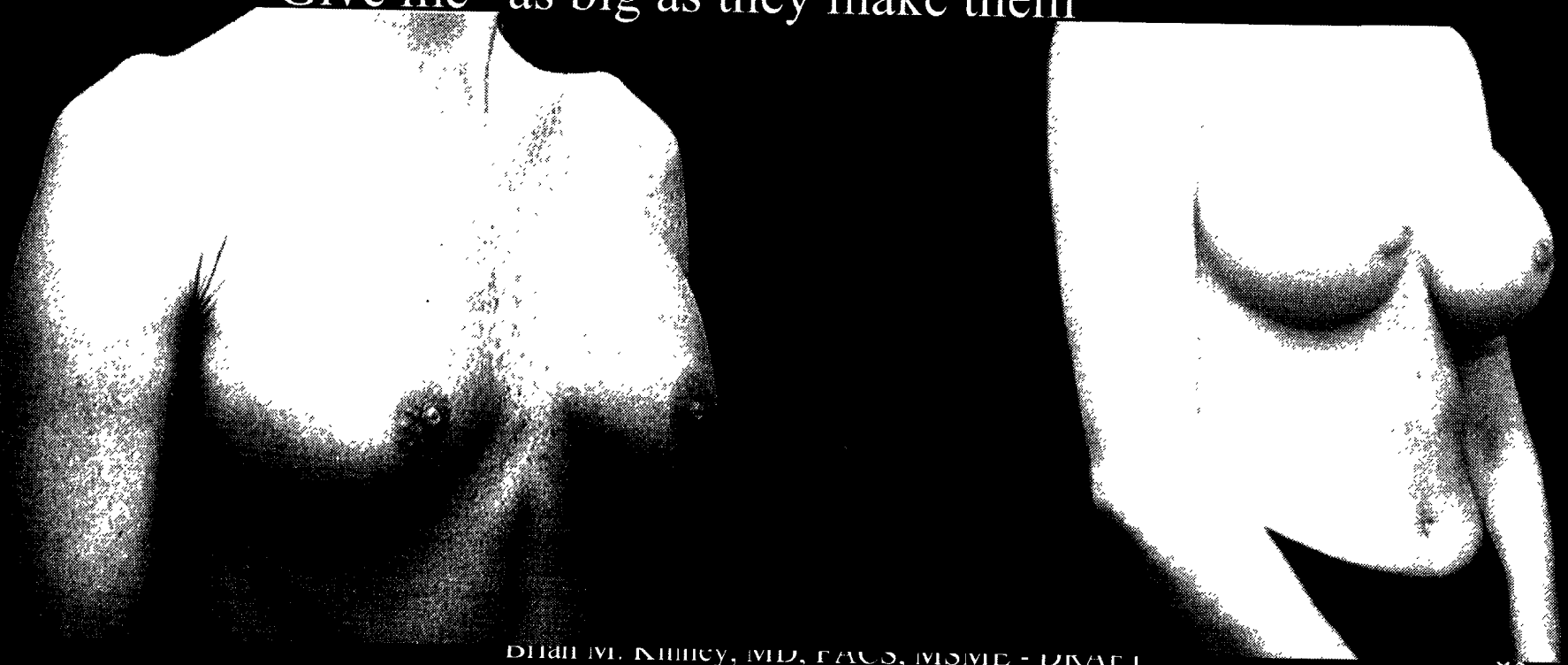
Submuscular 330 cc Smooth
Subglandular 600 cc Textured

Doesn't like elongated breast
Muscle contraction
9 years postop
Give me "as big as they make them"



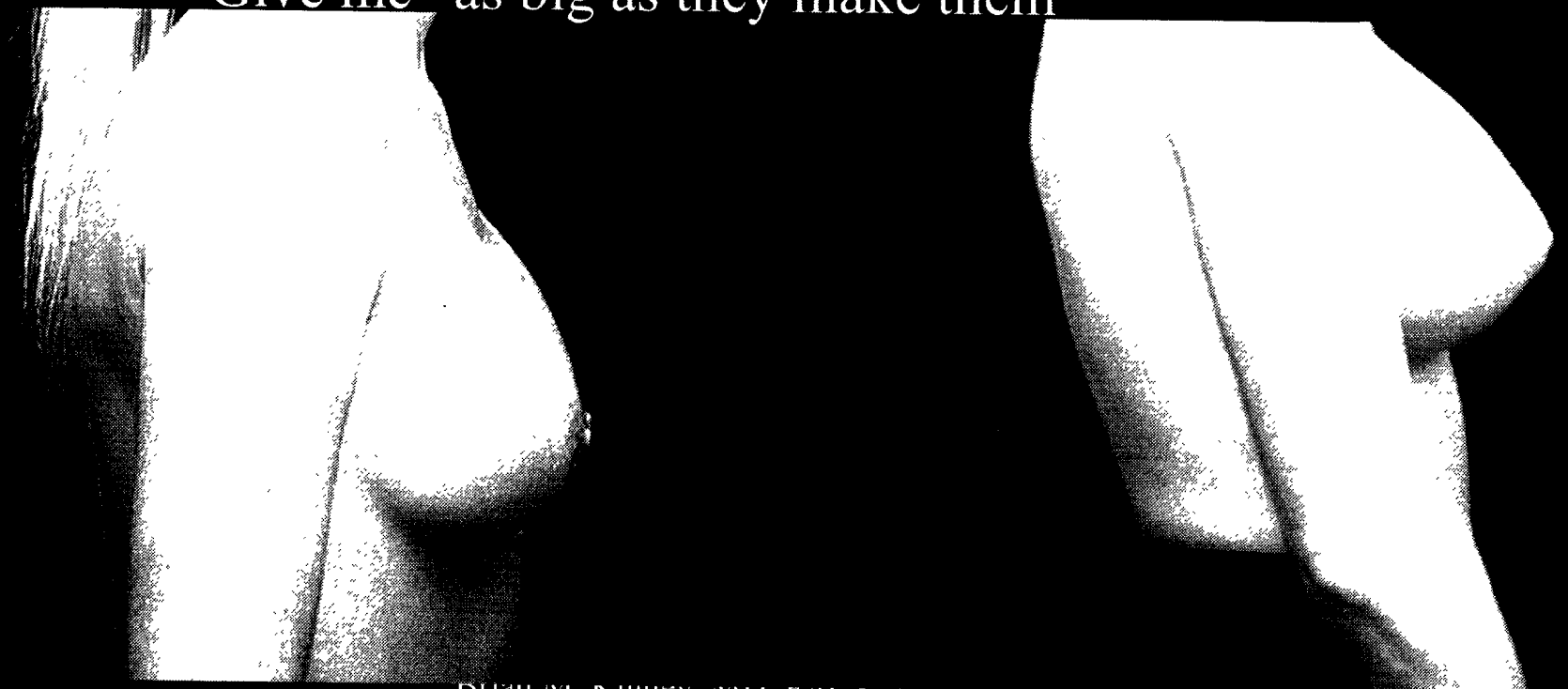
Submuscular 330 cc Smooth
Subglandular 600 cc Textured

Doesn't like elongated breast
Muscle contraction
9 years postop
Give me "as big as they make them"



Submuscular 330 cc Smooth
Subglandular 600 cc Textured

Doesn't like elongated breast
Muscle contraction
9 years postop
Give me "as big as they make them"



Subglandular 270 cc Smooth
Subglandular 390 cc Textured

3 previous procedures in another state
Minimal muscle
Stretching the limit of subglandular